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Canning Club Demonstration Problem VI Meat Canning : Extension Circular 9-26-2 1928

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E.C. 9-26-2

Nebraska.

COOPERATIVE EXTENSION WORK
IN AGRICULTURE AND HOME ECONOMICS

Revised
1928

U. of N. Agr. College & U. S. Dept. of Agr. Cooperating
W. H. Brokaw, Director, Lincoln

Extension
Circular
26-2

CANNING CLUB DEMONSTRATION
Problem VI

MEAT CANNING

Reasons for Canning Meats

There are several reasons why meat should be canned on the farm where it is raised and also in towns where people have a chance to buy it in quantities from the producer. Perhaps the most important reason is economy. At butchering time it is a temptation to use meat extravagantly because most people like it fresh better than when cured.

If the weather suddenly turns warm, meat is likely to spoil. Canning keeps it indefinitely and preserves the natural flavor. This makes it possible to serve fresh meat during the summer months and gives a better variety in the diet, thruout the year.

For those who raise poultry it is profitable to can the surplus male birds in the summer and fall. This preserves the meat when it is best for eating, and also saves the expense of feeding unprofitable chickens during the winter.

By canning meats in the fall and winter, we can keep our jars busy thruout the whole year. They are no longer merely "fruit jars" because we are using them for vegetables and meats as well.

If your mother has canned meat you know how convenient it is to have a supply on hand whether you live near a market or not. It is always ready, and when unexpected company arrives, a chicken dinner can be prepared in a very short time.

Precautions in Canning Meats

Meat canning has been considered difficult because as with vegetables it is necessary to observe carefully every step in the canning process. The government recommends that Club Members do not attempt the canning of meats until they have canned fruits and vegetables successfully.

The condition of the animal before slaughtering and the care of the meat afterward are both very important. Meat should never be canned unless it is fresh and from healthy animals. Sometimes people think that the heat used in canning meat will make it "safe" and wholesome even tho the meat has started to spoil. This is not true. Certain disease producing bacteria are probably killed by the canning process, but meat should not be canned unless it is in prime condition. Animals should not be exhausted or bruised before killing. If exhausted, the blood is driven into the capillaries all over the body making it impossible to thoroly bleed the carcass.

If sanitary methods are not employed in caring for the meat, after killing, it is easily infected. The intestinal contents should never be allowed to come in contact with the meat. It is very essential that meat be properly bled, cooled and stored. The carcass should hang twenty-four hours before cutting, then twenty-four hours for further cooling. The temperature of the storage room should be from 32 to 36 degrees F. This temperature is not low enough to freeze the meat, but is low enough to stop the action of ferments. If their action is not stopped, they will in time spoil the meat. It is very important that the temperature be kept the same. Alternate freezing and thawing is bad for the meat because it may start to spoil when thawed or partly frozen.

You perhaps have heard people say that frozen meat should not be used for canning or curing. This means that the meat while frozen or partly thawed should not be canned or cured, and the reason is plain. In this condition, the heat cannot penetrate the canned meat freely, and the brine cannot penetrate the cured meat evenly. It requires considerable time for frozen meat to thaw to the center, when canned in the boiling water bath. If the meat is thoroly thawed after freezing, it may be canned and will be a little more tender, as freezing helps to soften the connective tissue. There is a small loss of albuminous material and extractive salts when frozen meat thaws. The loss of extractives will be less if the meat is thawed slowly.

Expert food chemists tell us that it is dangerous even to taste spoiled food and that all foods which have a questionable odor should be destroyed.

"Officials of the Bureau of Chemistry, U. S. Department of Agriculture, say that Botulinus poisoning is caused by eating spoiled food infected with the bacillus botulinus. All spoiled food does not contain this poison. But any spoiled food even tho the spoilage is slight, may contain it. For this reason all food showing even the slightest unnatural odor, unnatural color, swelling of the tin container, signs of gas, or any evidence of decomposition, whatever, should be discarded."

One of the most important precautions therefore is this: Never can or use in any way, meat that is spoiled or suspected of being tainted.

See Precautions circular at the back of this problem.

Importance of Testing Jars

Have you heard people say, "These jars are new; they do not need testing", or "These jars were all right last year; they do not need testing." The answer we make to such people is that all jars should be tested before using. The fact that jars are new or that they sealed tightly last year does not mean they are tight seals now. Years ago the statement was made that ninety per cent of all spoilage was due to poor rubber rings and defective lids. Improved rubber rings and jars are now on the market so much of our spoilage at the present time is due to lack of testing jars or to careless testing. If the seal is imperfect for any reason, products will not keep. Thus the testing of jars is one of the most important steps in canning.

Each year we have more spoilage than we should have in our 4-H Canning Club exhibits, so we are asking club members to be more careful in testing jars. The following directions are included in this problem so they may be reviewed before the meat is canned.

Testing and Boiling Jars.

I. Test, wash and boil jars, lids and rubbers.

A. Testing jars, lids and rubbers.

1. Screw-lid jars.

- a. Run the fingers around the edge of the lid and the edge and shoulder of the jar to detect nicks, cracks and other flaws.
- b. If the inner lining of the lid is cracked, discard the lid.
- c. Metal lids which have been pried loose usually cause trouble.

An uneven edge can sometimes be remedied by placing the lid on a flat surface and rubbing the edge with a strong blade or knife handle until it lies flat on the table and touches at all points.

Jars may be opened by inverting the lids in hot water or by pulling out the rubber.

Never open with a knife if you expect to use the lid again.

- d. If the edge of the lid is sharp it should be rubbed until dull with a metal surface so it will not cut into the rubber.
- e. Make a final test in this way. Put hot water in the jar, place rubber and lid in position, make a tight seal and invert jar. Allow jars to stand inverted five to ten minutes to detect slow leaks.

If leak is above rubber, lid is usually defective. If leak is below rubber, jar is usually defective.

2. Glass Lid-Jars

- a. Run the fingers around the edge of the lid and the edge and shoulder of the jar to detect nicks, cracks or other flaws in the glass.
- b. Place rubber and lid on jar. Put wire bail in place over the top of the lid.

If the bail does not go on with a snap when the side clamp or tightening lever is up, remove it from the jar and with the thumbs bend it down in the center, as shown in Figure 1. The ends of the bail usually need to be pressed inward before it can be replaced on the jar. See Figure 2.

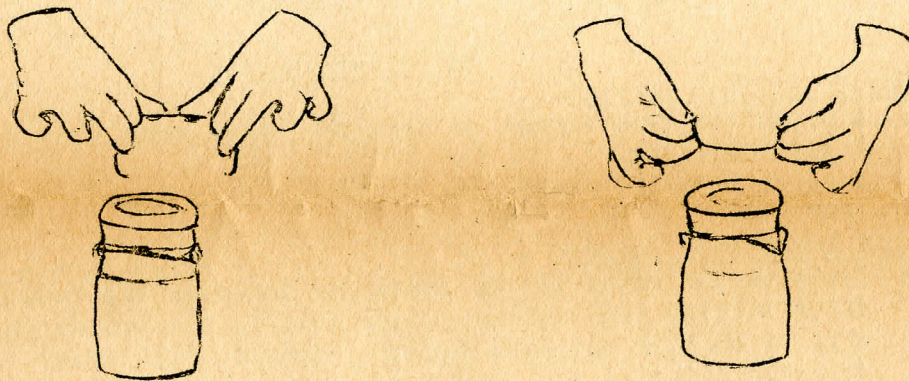


Figure 1. Bend down in center. Figure 2 bend in the ends.

Return bail to the jar but it in place over the top of the lid and see if it goes into the groove with a snap. If so, put hot water in the jar, make a tight seal by pressing the tightening lever down and test again by inverting the jar. If there is no defect in the jar or lid and the jar leaks, tighten the bail again.

If the bail is too tight it should be loosened by bending in the opposite direction to that given for tightening.

A little experience will make this adjustment process a simple matter. This testing of the bail should be done every time the jar is used for canning.

3. Metal lid jar with composition rubber.

- a. Examine both jar and lid.
- b. See that rubber is not cracked or pulled away from the metal lid.
- c. Rubber should be gummy, not granular or hard.
- d. This type of jar cannot be tested with water because the rubber composition does not form a tight seal until it cools after the processing period is over.

4. Test rubbers.

- a. Rubber should stand pulling, pinching, twisting and return to its original size and shape.

- b. Rubber should be strong enough to hold a weight of seventeen pounds.
- c. Four inches of a rubber ring should stretch to ten inches without breaking.
- d. Rubber should fit closely requiring a little stretching to get it around the neck of the jar.
- e. Rubber should stand several hours of boiling in a water bath canner.
- f. Color should make no difference in quality.
5. Testing is one of the most important steps because if the seal is imperfect for any reason products will not keep.
- B. Wash and rinse jars, lids, and rubbers thoroughly.
- C. Boil jars, lids, and rubbers.
 1. Place rubber on jar before it is put into the processing water. This saves handling after it has been boiled.
 2. The object in boiling jars is to heat them so it is safe to plunge them into boiling water after filling. Boiling further cleans the jars.
 3. Jars may be boiled in the processing water, to save space on the stove, or be heated in a steam bath or in an oven. When heating in an oven be careful not to heat them too much.

Water Bath Method

Essentials for Water-Bath Canners.

1. A container deep enough so that the water covers the tops of the jars.
2. A lid that fits.
3. A false bottom which allows the water to circulate freely underneath the jars.

Processing in a Water-Bath Canner.

1. Place enough water in the container to cover the tops of the jars.
2. After testing and washing, place jars in the processing water so they will be boiling hot when you are ready to fill them.
3. Have the water in the canner boiling before putting in the filled jars. To prevent breakage the jars should be boiling hot and be filled with hot material.
4. Be sure the jars are far enough apart and that the rack on which they are supported is so arranged that the water can circulate freely under and around them.
5. When all the jars are in the canner, see that the level of the water comes over the lids about one or two inches.

If necessary add more boiling water so that it covers the jars throughout the processing period.

6. Count time as soon as the water begins to boil vigorously.
7. Keep the water boiling during the full processing period.
8. As soon as the processing time is up remove the jars from the water.

If the jars were not sealed completely before processing, seal wire clamp jars before removal from the canner and all other jars immediately afterward.

9. Place jars far enough apart so they will cool quickly to room temperature. Plunge tin cans at once in cold water.

Steam Pressure Method

Essentials for steam pressure canners.

1. The pressure canner should have a pressure gauge as well as a pet cock and a safety valve.
2. The lid should clamp on tightly so that there is no leakage of steam when closed.

Processing in a steam pressure canner.

1. Pour boiling water into the canner until the level is just below the rack that holds the jars. Observe the water in the canner each time after removing jars and add more if necessary to prevent its boiling dry.
2. Seal jars completely before processing them in a pressure canner.
3. Place each jar in the canner as soon as packed.
4. When the canner has been filled adjust the cover and fasten securely.
In case the cover is fastened by several clamps, fasten moderately tight those opposite each other, one pair at a time; then go back over the whole set and tighten each pair.
5. See that no steam escapes anywhere except at the pet cock.
6. Allow the pet cock to remain open until steam escapes from it in a steady stream for at least three minutes, indicating that no air remains inside.
7. Close the pet cock so that only the slightest trace of steam can escape. Most people prefer to close the pet cock of a small canner entirely because if much steam is lost it boils dry.
8. Allow the pressure to rise until the gauge registers the desired pressure.
9. Begin to count time when the desired pressure is reached.
10. Keep a uniform pressure during the processing period by carefully regulating the heat.

Changes in pressure, as from ten pounds to fifteen pounds and down again may cause a loss of liquid from the jars. A sudden drop in pressure through cooling or release of steam may also cause a loss of liquid from jars.

Do not allow the pressure to go so high that the safety valve releases the steam suddenly. Do not open the pet cock when there is pressure in the canner because this also releases the steam suddenly.

11. At the end of the processing period, remove the canner from the fire.
12. When canning in glass jars allow the canner to cool until the steam gauge registers zero before opening the pet cock, and even then open it cautiously.

This is to prevent too sudden a drop in pressure, which would cause the liquid to blow out of glass jars, even though they are sealed.

13. Place jars far enough apart so they will cool quickly to room temperature.
14. When canning in tin open the pet cock wide and allow the steam to escape rapidly. Remove tin cans and plunge them into cold water.

Canning of Beef, Pork and Mutton.

Preparation of Meat.

1. After the animal has been butchered, cool quickly and keep cool for about forty-eight hours.

2. If the weather permits, tenderness and flavor are improved if the meat is aged from one to two weeks. Hang the carcass where it will keep cold but not freeze; a basement or attic may be used. Even a few days aging is desirable. A carcass well covered with fat ages best. One without fat can not be aged successfully.
3. Cut in small pieces or in strips that will fit into the jars, remove gristle, large bones and excess fat.
4. Do not roll the meat in flour before cooking because this makes it more difficult to process.
5. Sear the meat in the oven, in hot fat or boiling water so that it may be packed hot.
6. Pork chops may be canned either with or without the bone.
7. Sausage.--Form into little round or flattened cakes and fry in deep fat or saute in a skillet until nicely browned. Pack in jars. Pour off grease and add boiling water to the brown parts in bottom of the skillet, to make the gravy stock. Add this while hot to the packed jars. Sausage may be canned without adding any gravy stock.
Link sausage may be boiled for ten minutes or fried until brown before packing into the jars.
8. Meat heats through more quickly if precooked with liquid and the container completely filled with the boiling hot liquid. If handled in this way the jars may be sealed before processing.

Preparation of Beef Soup Stock.

1. All bones whether raw or cut from steak, roast or other cooked meats should be utilized for soup stock. Strip off the fat and meat.
2. Meat scraps may be browned to give added flavor to the stock.
3. Cover the bones with cold water.
4. Bring to a boil, then simmer until all the goodness has been extracted, about six or seven hours. The stock should be condensed enough to jelly when cold.
5. Five pounds of bones will make about one gallon of stock.
6. When well cooked, strain the stock removing bones and meat.
7. Skim off the excess grease.
8. The stock may be canned as it is or it may be clarified
To clarify -- Mix beaten whites of eggs with an equal portion of water adding the crushed egg shells, which have been washed. Add this mixture to the soup, bring slowly to a boil and cook five minutes, salt to taste and pour into hot jars.
9. Carrots, celery, turnips and onions are the vegetables commonly used to flavor soup stock. They may be added when the stock is made or when it is being prepared for use.

Filling of Jars

1. Remove a hot jar from the process water, place it in a pan of boiling water to keep it hot while filling.
2. Pack the hot precooked meat.
3. Add one to two level teaspoonfuls of salt to the quart, other seasoning if desired.
4. Fill jar with boiling stock or boiling water.
5. Place the rubber, if it is not already on the jar, then the lid.

Sealing.

1. In the water bath.

If the jars are filled with boiling hot material they may be sealed completely before processing.

If the material is not boiling hot when packed, the jars should be only partially sealed when put into the water bath.

2. In the pressure cooker.

Jars should be completely sealed before processing in the pressure canner. Hot jars should be filled with boiling hot material before sealing.

3. The following table tells how to make a partial seal and a tight seal with the different types of jars.

Jar	Partial Seal	Tight Seal
Screw lid	Tighten lid then turn it back 1/8 in.	Turn lid until tight
Glass lid	Snap the top bail into place and leave the side clamp up.	Turn the side clamp down.
Metal lid with composition rubber.	Place lid, press it down, around the edge and put on the wire clamp or screw ring.	Leave clamp or screw ring on until the jar is thoroughly cold. With this type of jar a tight seal is formed as the jar cools.

Processing.

1. In the water bath. See general directions for using the water bath page four.

Plunge the hot jars into the boiling water. Boil meat and soup stock three hours at 1,000 feet elevation. Three hours can be used in the extreme eastern and some other parts of the state, but in general the altitude rises as one goes west, so the time for processing in a water bath should be increased 10% for each additional 500 feet, or 20% for each additional 1,000 feet. Look up the altitude in your locality and figure the processing period for that altitude.

For example at Kimball, Nebraska, in the extreme western part of the state, the altitude is 4,679 feet. This is approximately 3,500 feet over 1,000, or seven additional 500 feet. If each 500 feet increases the time 10%, then seven additional 500 feet would increase the time 70%. 70% of three hours is 2.1 hours, or two hours and six minutes. Therefore, the time for processing meat in a water bath at Kimball, Nebraska would be five hours and six minutes.

Begin counting time when the water begins to boil and keep the water boiling the full time.

2. In the Pressure Canner. See general directions for using the pressure canner on page five.

Place the hot jars immediately in the canner and process for one hour at fifteen pounds pressure. The pressure gauge is affected by altitude, so the pressure must be increased one pound for each 2,000 feet above the first 2,000 feet.

For example at Kimball, Nebraska and other places in the state with an altitude of 4,000 feet or over, meat would be processed in the pressure cooker one hour at sixteen pounds pressure.

3. The United States Department of Agriculture recommends that vegetables and meats be canned in the pressure canner.

Dr. Stanley, Chief of the Bureau of Home Economics, says that where the water bath method is used for vegetables and meats each state must be responsible for its own time table, because conditions vary so much.

Dr. Stanley urges that products canned in a water bath be used the same year and adequate precautions be taken in their use. See precautions at the back of this circular.

4. The Steam Cooker method is not advisable for canning meat.
5. Farmers Bulletin No. 1471, gives the following suggestion with the water-bath timetable for canning fruits and tomatoes:

"When half-gallon glass jars are used, add five minutes to times given for pint and quart glass jars."

6. Since the government bulletin gives no time-table for canning non-acid vegetables and meats in a water bath, we think it advisable to hold to the old rule which was: "Add one half more time for two-quart jars."

Care After Processing.

1. Do not invert or turn glass jars on the side.
2. Care in testing the jars before filling is usually sufficient but it is best to observe the seal for a short time before storing.
3. Wrap glass jars in paper or place in jar boxes.
4. Store in a cool dry place.

Canning of Chicken

Preparation of Chicken.

It is best not to feed the chicken for at least twenty-four hours before killing. When the feathers have been removed and the pin feathers drawn the bird should be cooled rapidly. This rapid cooling after killing is essential to a good flavor in canned meat. Some prefer to have the chicken killed the day before it is used, in this case it should be kept in a cold place over night. As soon as the bird has been properly cooled it should be singed and washed carefully. A brush may be used if necessary.

Either young or old birds may be canned. Plump well-fed hens two years old have as good texture and better flavor when canned than six-month old chickens.

Cutting Up and Drawing.

In preparing chicken for canning, care should be taken in drawing it so that the contents of the digestive tract do not come in contact with the meat. With the following method the whole digestive tract is removed at one time so there is little danger of cutting it.

1. Remove the tips of the wings, cutting at the first joint.
2. Remove the wings.
3. Remove the feet cutting at the knee joint.
4. Remove the leg cutting at the hip or saddle joint.
5. Cut the removed portion of leg into two parts at the joint.
6. Place the bird so the neck is toward the operator.
7. With the index finger separate the gullet and windpipe from the skin of the neck.
8. With a sharp pointed knife cut thru the skin from the upper part of the neck to the wing opening made by removing the wing.
9. Loosen the gullet and windpipe from the neck down as far as the crop.
10. With a sharp pointed knife cut around the shoulder blade, pull it out of position and break it.
11. Find the white spots on the ribs. Begin at the point where the shoulder blade was removed cut thru the ribs on these white spots.
12. Cut back to the vent; cut around it, and loosen. Lay open the two lengthwise sections of the body.

13. Begin at the crop and remove the digestive tract from the bird pulling it back toward the vent.
14. Separate the breast from the backbone by cutting thru the white spots on the other side of the chicken. Then cut back to the vent which completely separates the two sections of the body.
15. Remove the lungs and kidneys with the point of a knife.
16. Cut off the neck close to the body.
17. Cut thru the backbone at the joint or just below the ribs.
18. Remove the oil sack.
19. Cut the fillet from each side of the breastbone.
20. Cut in sharp at the point of the breastbone turning the knife and cutting away the wishbone with the meat. Bend in the bones of the breastbone.

A canning club leader suggests the following changes in the above directions for cutting the chicken.

No. 4 and 5. Remove the leg first then the thigh.

No. 10 and 11. Omit No. 10 and cut from the wing opening through the ribs on the white spots.

Wash and Precook.

1. Wash the pieces carefully.
2. Sear the meat in the oven in hot fat or boiling water so that it may be packed hot.
3. Do not roll the meat in flour before cooking because this makes it more difficult to process.
4. Pack immediately into hot jars.

Packing.

Do not can the giblets and eggs. If one has several chickens to can at one time it is best to sort the pieces packing the choice pieces in one jar and the soup pieces in another. Trim off any large pieces of fat. If there is a great deal of fat in the jar it may cook out on the rubber ring and cause it to slip.

The following suggests a method for packing a four pound chicken in a quart jar.

1. Remove a hot jar from the water-bath, place it in a pan of boiling water to keep hot while packing.
2. Pack the saddle with the thigh inside.
3. Pack the breast bone with a thigh inside.
4. Pack the backbone and ribs with a leg inside.
5. Pack the leg large end downward, along side the breastbone.
6. Pack the wings.
7. Pack the wishbone.
8. Pack the fillets.
9. Pack the neck bone.
10. Pour on boiling broth to fill the jar.
11. Add two level teaspoonsful of salt to the quart.
12. Place the rubber, if it is not already on the jar, then the lid.

Sealing.

See page seven.

Processing.

See Pages seven and eight.

Care After Processing

See page eight.

Exhibit Jars

Following are some hints on canning meat given us by the "We Can Can" Club of Adams County. This club took many State and Interstate Premiums on its exhibits. They selected meat of good quality.

Browned Meat.

1. Wipe pieces of meat dry.
2. Drop into a kettle of deep hot fat and sear for about fifteen minutes. (A wire frying basket is convenient).
3. Lift the pieces carefully with two forks and place them in the hot jar.
4. Fill jar with boiling water and process.

Deep fat has the advantage that meat fryings do not stick to the meat and later appear in the liquid.

Unbrowned Meat.

1. Cut into pieces that are a convenient size for packing.
2. Cover the meat with boiling water and boil one-half hour.
3. Remove the pieces and wipe with a cloth to remove loose particles.
4. Pack into the jars being careful not to break or mash the pieces.
5. Fill jar with boiling water and process. (Water in which the meat is boiled should be used for soup stock.)

Chicken

1. Can chickens which have a yellow skin and select the best pieces.
2. Scald carefully so that the skin will not be torn. The water must not be boiling hot.
3. Remove every pin feather.
4. Make accurate cuts.
5. Do not can the giblets and feet.
6. The chicken should not be too large, a two and one-half pound chicken makes the best pack.

Canning Club Requirement.

We encourage club members to can with their mothers or some other adult. They may record in their record books all of the products which they help to can if they help through the whole canning process.

To be entitled to a certificate of Achievement, the following is required of second year canning club members:

Can at least 65 jars as follows:

50 jars including four varieties of fruits and four varieties of vegetables.

15 jars including three jars of meat, nine jars of jelly, preserve and conserve, and three jars of pickles.

Score Food Habits

Keep Food Calendar for one week.

(Prepared by Jessie G. Greene, Assistant State Extension Agent, Boys and Girls Clubs, Approved by Department of Home Economics).

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